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Fact Sheet

South Carolina Department of Health and Environmental Control • www.scdhec.gov

Frequently Asked Questions About Ambient Air Monitoring In South Carolina

Why is the air in South Carolina being monitored?

Air monitors are operated throughout the state to measure the concentrations of pollutants in the ambient air. Ambient refers to air that is outside of homes and businesses and that the public breathes. The Federal Clean Air Act requires the U.S. Environmental Protection Agency to set national ambient air standards for pollutants considered harmful to public health and the environment. Those are called the "criteria" pollutants.

Who is responsible for monitoring the air quality in South Carolina?

The S.C. Department of Health and Environmental Control is responsible for operating the air monitoring network in South Carolina. Pollutant concentrations are measured using either samplers that collect pollutants, which are then analyzed in a laboratory, or monitors that can analyze and report the concentrations almost immediately.

What pollutants are being monitored through the program?

The ambient air monitoring network samples or monitors for all the criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), lead (Pb), inhalable particulate matter ($PM_{2.5}$ and PM_{10}), and sulfur dioxide (SO_2). South Carolina monitors for the state-specific standards and fluoride. Other pollutants, including air toxics, and pollution impacts, such as regional haze and acid rain are also monitored.

What purposes do the air monitors serve?

Individual monitors within a network are typically intended to answer one or more of the following questions:

- What is the highest concentration of the pollutant?
- What concentrations are large populations exposed to?
- What is the impact of a pollutant source?
- What are the background concentrations?
- What are the long-term trends in pollutant concentration?
- What contributions are there from transport to/from other areas?
- What are the contributors to and concentrations of pollutants in areas where there are welfare impacts such as visibility, acid rain impacts, etc.?

What area does the monitor represent?

Each monitor provides data that indicate pollutant concentrations in an area that may range from a very small area to many miles across. This is called the "scale" of the monitor. Monitor scales in the South Carolina network range from "microscale" of 10 to 300 feet across, to "regional scale," which represents air quality in an area of thousands of square miles. Each monitor at a site has an associated scale, and the scales may be different for different pollutants at the same location.

What factors are used to determine the location of an air monitor?

The location of a monitor is determined by the question(s) to be answered. The air sampled must be representative of the area (and/or similar areas). Local sources and exposure are important but practical matters like site access, security, availability of utilities and cost play a role in the final selection. Minimum requirements are established for each pollutant, objective and monitoring scale to make sure the data is not unduly influenced by pollution sources.

Can monitors be moved? Why not move the monitors from place to place?

Yes, monitors can be moved for specific reasons. A monitor might be moved because of changes in the area around the site that make the location less representative. There are scientific and regulatory reasons to try to maintain a fixed site for as long as possible. One of the goals of an ambient air monitoring network is to track trends and progress.

Weather patterns can change from year to year (El Nino, droughts, etc.) and operating a monitoring site for several years is needed to understand typical air quality in that area. The year-to-year changes related to the weather can make changes in pollutant concentrations hard to see unless there is a long, consistent data record. If monitors are moved often, even within the same area, it is very difficult to know if any concentration differences are caused by something at the site or a change in the weather.
Many of the national standards require several years of data at one location to determine the impact of “unusual” years or events.

The EPA has determined a minimum number of monitoring sites that must be established and maintained for each pollutant. DHEC annually reviews the monitoring network to make sure the minimum requirements and the needs of the air program are met. If changes are needed in the network to meet new requirements, address new questions or redirect resources, then those changes are made available for public review and EPA approval in the Annual Ambient Air Network Monitoring Plan.

What happens to the data collected by the monitors?

Once the monitoring data is collected, it is checked for quality and accuracy. DHEC places all data in a national database where it is available for use by government, scientists and the public. Some preliminary measurements are available within hours on the EPA AirNow and DHEC Web sites.

Why isn’t there a monitor in my county?

It is not necessary for a monitor to be located in every county to have an idea of the local air quality. Monitoring is focused on the areas where pollutant concentrations are expected to be highest, so areas with fewer impacts are expected to be better. Monitors in larger areas are checked to be sure they accurately represent the air quality there. We know a couple of ozone monitors reasonably represent the rural coastal plain because DHEC has monitored places in-between to confirm similar concentrations and patterns.

South Carolina also monitors air in smaller towns and cities where EPA does not require monitoring in order to make sure the network fairly represents all of South Carolina’s air quality.

Special studies are done when there are specific questions that need to be answered for an area or type of pollutant source.

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